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The type, a cast of the medullary cavity, has become broken into 3 pieces, which when joined give evidence of this species striking peculiarity, the great length of the internodes. The ribs, in greater number run straight into the branch scar, with apparently no great tendency to converge. No trace of a bark is present. This form is respectfully dedicated to J. C. Pettermann, Professor of Biology, University of Pittsburgh.

Pl. I.

Fig. 1. Calamites cruciatus Harrisoni, n. sp. x 1.
Fig. 2. The same, a branch scar x 2 1-2

Pl. II.

Fig. 1. Calamites multifoliatus n. sp. x 1.
Fig. 2. The same, x 2 leaves and ribs slightly magnified to show their arrangement.

Pl. III.

Fig. 1. Calamites Fettermanni n. sp. x 7-11
Fig. 2. The same, a branch scar x 3

Central High School,
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OUR WINTER BIRDS.

BY BROTHER ALPHONSUS, C. S. C.

(CONCLUSION.)

RED-HEADED WOODPECKER

Melanerpes erythrocephalus

This woodpecker is not a regular winter species, and was found by the writer for two seasons—1913–1914 and 1914–1915—in twelve years of observation.. Manuals of ornithology state that the abundance of food suitable for this species will cause it to stay during the winter. But if that be true, why was this food not found but twice in twelve winters, although these were both consecutive seasons? I cannot believe that such was the case, and therefore I do not think that the problem of the birds' presence can be solved by the food question. Of course the species was not present in large numbers, never more than a few individuals were seen; and this fact might point to a solution of the problem. Individuals of other species; such as, the Meadowlark, Robin, Bronzed Grackle, may be seen by careful observers in winter; and if this is so, why would not the presence of the Red-headed Woodpecker for two winters be due to the same peculiar causes as lead these other species to stay in small numbers?

SNOWBIRD
Junco hyemalis

A comparison of two sets of years, each containing four years, shows much irregularity for the Snowbird. During the first period the total number of records was 60, and for the four last years there were 137 records. Here is something rather hard to explain. Why should there be such a notable difference in the number of records of a common species in the two sets of years? It cannot be that the four first seasons were more severe and the snow more deep. I am inclined to believe that a number of winter species go farther south than our latitude, perhaps very few individuals remaining with us during the severest part of the winter. And when any species is present only in small numbers, it may not be found over a large area. These facts may account for the scarcity of the snowbird during parts of some winters. However, there may be other causes, more or less inexplicable, but none the less certain, that, if known, would account for the irregularity and scarcity of this and other winter species.

DOWNY WOODPECKER
Dryobates pubescens medianus

Some interesting figures were obtained for this species in eight winters. The four first show as the total number of records—47, with an average each winter of about 11 records; the four last have a total of 99 records, and an average yearly record of about 24. I could not begin to account for such great disparity in distribution as is disclosed by these figures. Were the weather conditions so different in both sets of years as to cause this notable difference? As already stated in regard to other species, I think not. Neither was it a food question. What then are the possible determining factors in the distribution of the Downy Woodpecker? Well, I have observed that at other seasons of the year this species may often be long absent—why, I cannot say. But this is a fact, and such a thing may occur in winter as well as in spring, let us say. My opinion, then, is that migration is one of the principal factors in the small distribution of this species at certain seasons of the year, winter among them.

TREE SPARROW

Spizella monticola

The study of this, the commonest of our winter sparrows, has been very interesting to me. In four winters I made but 28 records for the species; in four other winters I made 87 records. These observations suggest a number of interesting questions. First, what was the porbable cause of the great difference in distribution between the two sets of years? I think the Tree Sparrow can never be found in abundance during winter, but is always present in a few small flocks. Second, I am disposed to believe that the species shuns places where snow is deep, and will therefore be absent from such localities for long periods of time. I admit, however, that such reasons as these do not fully account for the disparity noted above. To my mind the movements of birds in winter are more or less involved in mystery. How true it is that science may observe and name, but many things it can never explain. But this mysterious element is a lure always beckoning the student to make more ardent efforts to grasp the coveted knowledge.

CHICKADEE

Penthestes atricapillus

A very curious instance of irregularity and scarcity is found in the Chickadee. In four winters, 1909–1910 to 1912–1913, I made but five records for this species; and from 1913-1914 to 1916–1917, there were 107 records in winter. Here is certainly an enigma. Not only was great disparity noted between the two sets of years, but between two seasons of the second set there was the same. Did the Chickadee change its habits towards the end of my observations? Compare five records with 107, and try to explain the disparity on any other supposition. In spring and summer this species is absent almost continuously, returning to the deep woods for nesting. Here it may be found by any observer who goes to such a place. This is clear enough; but to explain the irregularity of the species in the various winters it was under my observation, this I cannot do.

SNOWFLAKE

Plectrophenad nivalis

The records obtained in eight winters for the Snowflake are interesting. For three winters the species was not found. In 1913–

14 there were ten records, more than in all the other winters put together. From these figures we may see that the Snowflake is very irregular and unsually very rare. Just why this should be I am at a loss to know, for Notre Dame lies within a snow-belt about forty miles wide. One would expect a snow-loving species to be more regular in its appearance in such a place.

GOLDFINCH
Astragalinus tristis

As a winter species the Goldfinch is usually rare, if not very rare. Of the eight winters under consideration, there were five whose total number of records for this species was but five. The other three winters totalled 26 records, which shows that the Goldfinch was always rare. The birds travel in small flocks in winter, and unless the observer finds their feeding or drinking places, he may seldom see them.

BROWN CREEPER
Certhia familiaris americana

Comparing the two sets of years, I find that in the first there were 13 winter records for the Brown Creeper, and in the second 74 records. At first sight it would seem incredible that such disparity in distrubution could be shown for a species that is usually rare in winter. But the records obtained are conclusive that the difference was real. To account for a notable increase in at least one season, 1914–15, by the fact that this winter was very mild, seems satisfactory enough. On the other hand, the very small number of records, 13, made in the four first seasons cannot be attributed to the greater severity of those winters; there ought at least to be an average number for each year that would not greatly exceed the average of each of the other four years. Even by eliminating the largest record, 40, in 1914–15, this mean yearly average cannot be shown. From these facts we must conclude that the Brown Creeper is one of the most irregular winter species.

SONG SPARROW
Melospiza melodia

The records for the Song Sparrow in eight winters show only two for the four winters, 1909–10 to 1912–13, and 45 records for the four succeeding winters. Of course it were worthless to make any comparison between these figures, and the only obvious thing to say is, either the writer failed to obtain the actual records for the first set of years, or the Song Sparrow has established itself, in recent years, as a fairly common winter species.

The winter habitat of the Song Sparrow is in the shrubbery along the shores of small lakes, or in low, waste land. Secreted in such places, the birds seldom show themselves, and usually the observer hears them before he sees them. It is difficult under such condition to know how plentiful the species is during winter. From appearances it looks as if a few individuals only remain throughout this season.

BRONZED GRACKLE

Quiscalus quiscula aeneus

The Bronzed Grackle had no winter records from 1909 to 1912; and for three other winters there was a total of 23 records, the species not appearing in the winter of 1914–15. The non-appearance of the Bronzed Grackle for four winters, and then its appearance for three winters, presents a curious case of irregularity of distribution. Only one bird was ever seen at any time, and this fact may go far toward explaining the absence of the species for five winters out of eight. Why this individual remained in winter is another cruious occurrence that would be difficult to explain.

MEADOWLARK

Sturnella magna

In eight winters the Meadowlark had but three records. Usually one and sometimes two individuals were seen. The presence of these birds seemed to indicate that they were wintering somewhere in our vicinity, but must have been little given to leaving their habitat. Another thing that strengthens this belief is that the Meadowlark was seen in every month in winter.

SPARROW HAWK

Falco sparverius

In eight winters the Sparrow Hawk was found at least once in each month, a fact that shows this is a true winter species. This being so, it is difficult to tell why there have been only four records in eight winters. Of course, like all the other hawks, this species wanders about much more in winter than at other seasons of the year. This habit may in fact account for the scarcity of the Sparrow Hawk. I think also that places that are farther out in the country are likely to be better feeding grounds for this small hawk.

SCREECH OWL
Otus asio

There was a total of 14 records for the Screech Owl in eight winters, and seven records for each division of four years. The probability is that these figures do not show the actual distribution of the species; for the Screech Owl, besides being nocturnal in its activities, does not often utter its note in winter.

CARDINAL
Cardinalis virginianus

The Cardinal was recorded seven times in three winters, and not found in five other winters. Always very locally distributed, this species is more difficult to see in winter than at any other season of the year; for then the bird is seldom heard to whistle, and it does not venture far from its feeding grounds.

HAIRY WOODPECKER
Dryobates villosus

The Hairy Woodpecker is one of our rarest winter species—five records in eight years. Out of these eight years, the species did not appear for five winters. The individuals that were seen must have wandered away from their usual habitat, the deep woods. The note of this species, which is louder and sharper than that of the Downy Woodpecker, easily distinguishes it from the smaller species. The whirring sound made by the wings is another way of recognizing this woodpecker.

EVENING GROSBEAK
Hesperiphona vespertina

This species was recorded only in one winter, 1910–11. There were two records in December and one in January. A small flock was seen each time, and the birds were feeding on the seeds of box-elder trees. I have not heard of any one observing this Grosbeak since the winter of 1910–11 in our vicinity. If any of my readers should know that records have been made of the Evening Grosbeak in northern Indiana, within the last seven years, I should be grateful to hear about them.